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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,138	02/11/2004	Naoki Mizoguchi	36856.1208	2430

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MURATA MANUFACTURING COMPANY, LTD.  
C/O KEATING & BENNETT, LLP  
8180 GREENSBORO DRIVE  
SUITE 850  
MCLEAN, VA 22102

EXAMINER
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JACKSON, BLANE J

ART UNIT	PAPER NUMBER
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2618

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/775,138

Applicant(s)

MIZOGUCHI ET AL.

Examiner

Blane J. Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-11 is/are rejected.
- 7) ☐ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kundu (US 6,825,740) in view of Fiediuszko (US 5,484,764).

As to claims 1 and 3, Kundu teaches a dual-mode bandpass filter comprising:

A dielectric substrate (figures 1,2, 17 and 18, dual-mode bandpass filter (10) with dielectric block (11), column 4, lines 38-52),

A resonator electrode disposed *on a top surface* in said dielectric substrate (figure 1, column 4, lines 53-58, metal plate (12) and figure 5, column 6, lines 44, metal plate (20)),

A ground electrode disposed *at the bottom* in said dielectric substrate from said resonator electrode so as to oppose said resonator electrode (figure 2, column 4, line 59 to column 5, line 4, metal plate (13) with a corner (16) removed to excite the dual-mode) wherein,

Said ground electrode includes at least one opening whereby a resonant electric field of said resonator electrode is controlled to couple two resonant modes generated in said resonator electrode (figures 16 and 17, column 9, lines 14-30, instead of a

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removed corner (16), a circular or rectangular portion is removed and positioned at an inner location of metal plate (13) to disrupt the symmetry of the resonator structure and provide coupling between the dual modes).

Kundu teaches the resonator and ground electrode are respectively disposed at the top and bottom of a dielectric substrate block but do not teach they are disposed at a certain height within the dielectric substrate.

Fiediuszko teaches a bandpass filter configured with two or more dual-mode resonators that are positioned by layers within a dielectric substrate block, figures 3 and 4, column 4, line 3 to column 6, line 66.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the electrode layers of Kundu in the configuration of Fiediuszko such that the layered electrodes/ dielectric operates within a high dielectric constant (column 1, lines 46-58) so as to reduce the electric wavelength of the resonate frequency thereby reducing the overall physical configuration of the filter for the selected resonant frequency.

As to claim 2, Kundu teaches a dual-mode bandpass filter according to claim 1 wherein the opening is disposed at a position substantially opposing said resonator electrode (figures 2 and 17, opening (16)).

As to claim 6, Kundu teaches a dual-mode bandpass filter according to claim 1 wherein said ground electrode includes a plurality of openings (column 9, lines 26-30, a plurality of removed portions (16)).

As to claim 7, Kundu teaches a dual-mode bandpass filter according to claim 1 wherein each opening has one of a substantially rectangular or circular shape, column 9, lines 14-30, but is silent as to substantially rhombic or polygonal shape in plan view. However, since Kundu teaches shapes as alternatives the removed corner portion (16), it would have been obvious to one of ordinary skill in the art at the time of the invention to apply other shapes in the removed portions in the resonator structure of Kundu since any similar shape of the removed portion is necessary to disrupt the symmetry of the resonator structure to provide coupling between the dual modes.

As to claim 8 Kundu teaches a dual-mode bandpass filter according to claim 1 further comprising an input/output coupling circuit coupled with said resonator electrode (figures 1 and 2, column 4, line 65 to column 5, line 10, exciting electrode (14)).

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kundu (US 6,825,740) and Fiediuszko (US 5,484,764) in view of Kundu et al. (US 6,326,865, hereafter Kundu '865).

As to claims 9-11 with respect to claim 1, Kundu of Kundu modified teaches a bandpass filter according to claim 1 teaches the application of dual mode dielectric

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waveguide bandpass filter in communication terminals, column 1, lines 13-35, but is silent as to a duplexer comprising at least one dual-mode bandpass filter.

Kundu '865 also teaches a dual mode filter, though a microstrip design comprising a ring resonator, discloses application as a duplexer comprising at least one (two) dual mode bandpass filters, figure 9, column 1, lines 45-67 and column 6, lines 36-65.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the general application of the bandpass filter of Kundu modified as suggested in Kundu '865, a patent by the same inventor, such that the dual-mode bandpass filters provide excellent signal separation when combined to form a duplexer.

### ***Allowable Subject Matter***

Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Snyder et al. (US 6,476,693), Fiedziuszko et al. (US 5,136,268), Mansour (US 5,200,721), Mizoguchi et al. (US 6,507,251) and Mansour (US 5,786,303).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 9:00 AM-6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJJ

  
EDWARD F. URBAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600